Going Remote

Actionable Insights from Indiana University's Transition to Remote Instruction due to COVID-19

Overview and purpose

On March 10, 2020, Indiana University (IU) announced the suspension of in-person instruction due to COVID-19. At that time, the eLearning Research and Practice Lab, a laboratory within the Indiana University Pervasive Technology Institute, began preparing to conduct a full-census survey of all undergraduates and instructors across all IU campuses. The study's purpose was to examine student and instructor experiences of the transition to remote instruction, and to identify actionable insights that may improve instruction during future semesters.

The recommendations that follow are interpreted from trends and correlations at a population level without drilling down to specific units or subgroups. They are proffered with the understanding that different instructional strategies have advantages within specific contexts, while others may have been necessary due to the immediacy and abruptness of the Spring 2020 transition to remote instruction. This is not an evaluation, and additional research will continue in the coming months. But given the instructional modifications necessary in the upcoming semester, many stakeholders have expressed an immediate need for insights, however tentative, to guide planning, despite the caveats mentioned above. Similarly, many students, in their open-ended feedback, expressed concern that their voices be heard while such planning is still underway.

Sample and method

We deployed two surveys shortly after the end of the Spring 2020 semester: one to all students enrolled in a credit-bearing undergraduate course at IU, and one to all IU faculty and individuals with a "Teacher" role in an SIS-provisioned Canvas course. Both surveys were conducted via Qualtrics. Nonrespondents were sent up to four email reminders during the four-week deployment, which began shortly after the end of the Spring 2020 semester. In total, 6,156 students and 1,538 instructors are included in the current sample. The median time to complete the survey was 12.6 minutes for students, and 16.7 minutes for instructors. Due to legal and compliance restrictions on research data collected overseas, respondents who indicated that they were not currently residing in the United States were excluded. Thus, international students who are currently abroad are underrepresented in the current sample.

To see the complete survey instruments, see "Availability of survey data and opportunities for future collaboration" below.

For instructional strategies, resources, and support, visit keepteaching.iu.edu.

Recommendations

1. **Assign classwork judiciously, and in alignment with clear learning goals.**
2. **Create opportunities for student-instructor communication, especially for first- and second-year students.**
3. **Facilitate student success and foster a sense of virtual community through student-to-student communication.**
4. **Collaborate with other members of IU's vibrant teaching community by sharing materials and successes and providing venues for others to do the same.**

RECOMMENDATION 1

Assign classwork judiciously, and in alignment with clear learning goals.

While this recommendation is generally applicable to all teachers, it is of paramount importance during remote instruction. Most students responding to the study reported increases in classwork volume, and in the effort required to complete it, paired with a decrease in their understanding of the course's learning goals and a great many references to large amounts of "busy work" in open-ended comments. For instance, **73%** of students agreed that it took more effort to complete their assigned work after the transition to remote instruction, and many reported high anxiety due to ballooning numbers of deadlines and assignments.

Students who reported higher levels of effort similarly reported feeling less successful as college students, and less agreement regarding self-perception as college students. **Fifty-seven percent** of students disagreed that they had a better understanding of learning goals. In open-ended comments, students frequently asked instructors to post all assignments and deadlines in Canvas (even if the assignment is carried out outside Canvas), so that they can make use of the **Canvas To-Do list** or **Boost** to assist their ability to stay organized and manage time effectively.

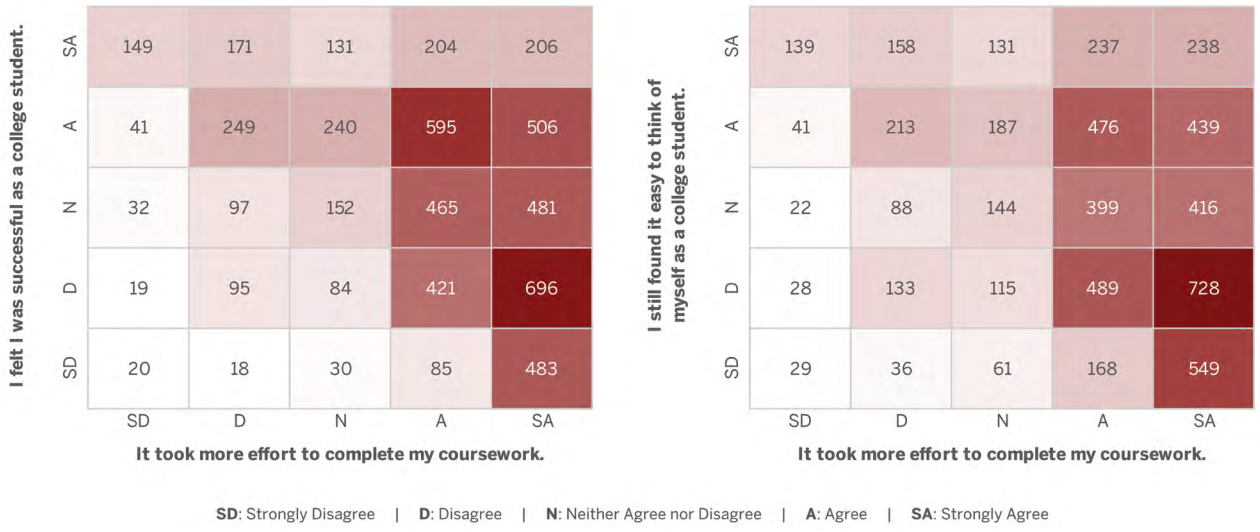

Figure 1: For accessible tabular data, please see Appendix A on page 11.

RECOMMENDATION 1 | REPRESENTATIVE COMMENTS

There was a lot of extra "busy work" to account for participation points/attendance points. These assignments made it difficult to focus on the larger work.

Professors gave more busy work assuming we had more time, but it was the opposite in my case.

For the instructor do not assign a lot of busy work...it is not helping with my learning...it [is] just making me more stressed.

I would appreciate if my instructors stuck with their syllabus and did not add additional busy work because this became very stressful and overworked me. I found the more additional work that was added I began to enjoy the class less and less.

Limit the amount of busy work given. The "in-class assignments" took hours longer than the actual class time and they were on top of lecture and regular outside-of-class assignments.

RECOMMENDATION 2

Create opportunities for student-instructor communication, especially for first- and second-year students.

During the period of remote instruction, instructors became the primary lifeline between IU and its students. However, **67%** of instructors agreed that they felt disconnected from their students, and 74% of students agreed that they'd lost touch with the Indiana University community. Freshmen and sophomores (**24%**) were more likely than juniors and seniors (**19%**) to disagree or strongly disagree that their instructors were more available for support. Furthermore, though Canvas tracks student access of online course materials, submission of online assignments, and visits to course sites, only **16%** of instructors agreed that it was easier to keep track of how their students were doing. As students' local support networks dispersed, instructors have played a more central role in student support than they had previously; all the while, they were also occupied with adapting and delivering assignments and assessments. The level of instructor support was associated with self-reported success as a college student, belonging to the community, and level of challenge and effort within the course. Given all of this, in future semesters, instructors should deliberately identify channels and spaces for students to interact with them, and should consider using Course Interaction Summaries or Course Analytics to identify students who are disengaging and reach out to provide additional support. This could be particularly important for students new to the university, who may not know how to ask for support, or how to disclose personal challenges to their instructors.

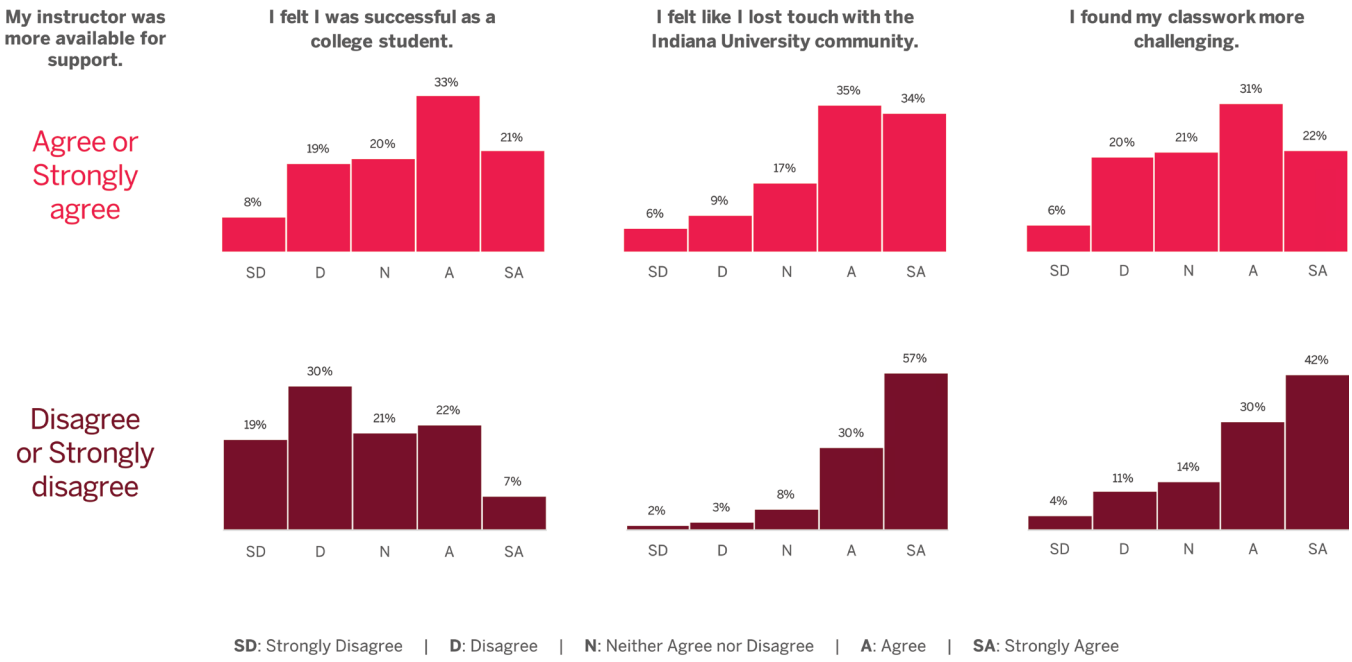

Figure 2: For accessible tabular data, please see **Appendix B on page 12**.

RECOMMENDATION 2 | REPRESENTATIVE COMMENTS

The most positive outcome was seeing certain instructors of mine dedicate their time and effort in keeping the learning experience a proper investment. You could tell the instructors who really cared and tried their best to make sure students were learning the material despite all that was going on. The evident care of those few instructors, going out of their way to maintain clarity, were truly helpful and appreciated.

My instructors mostly gave up on teaching and switched to assignments instead. They could have been more responsive and open to forms of direct communication.

I truly enjoyed Zoom lectures. I felt as if it was easier to talk to each other than it is in a classroom setting or a discussion forum. I think more online classes should use this (coming from someone who has taken ~10 online classes). It also forces the professor to be more engaging with the students because we can type a question anytime, then they get back to us when they finish their thoughts.

Instructor Comment: I was very concerned about losing touch with my students and not feeling like we are connected as we are in the classroom, but through the Zoom classes, I think we were able to stay connected. I also offered Zoom help sessions and individual Zoom sessions with students, so that really helped to stay connected. I was happy that we didn't start the semester remotely because I felt it did help to know them a little before this all started. If we have to teach remotely in the fall, I want to do individual sessions with my students to create that connection early.

RECOMMENDATION 3

Facilitate student success and foster a sense of virtual community through student-to-student communication.

One of this study's most poignant findings notes that many IU students experienced a deep sense of isolation during remote instruction. Many instructors, laudably, rose to the challenge of providing support and encouragement to their students and, as noted above, this should continue. Another important means of facilitating connection to the academic community, improving student engagement, and reducing feelings of isolation, is to provide more opportunities for students to interact with each other. According to students' and instructors' descriptions of class activity, this was fairly uncommon; however, when students noted that discussions were a primary aspect of their classwork (without distinction of whether these were synchronous or asynchronous), they also reported increased success and better outcomes. Only **33%** of students reported that such discussions were a primary aspect of their classes after the transition to remote instruction.

	% in agreement in courses where "Discussions" was marked as a primary aspect of the course	% in agreement in courses where "Discussions" was NOT marked as a primary aspect of the course
I felt I was successful as a college student.	**49%**	**41%**
I felt like I lost touch with the Indiana University community.	**69%**	**77%**
I had a better understanding of the learning goals.	**12%**	**9%**
My academic goals became less important to me.	**39%**	**44%**
I still found it easy to think of myself as a college student.	**44%**	**38%**

The top five activities that instructors marked as being "significant components" of their courses were 1) working on projects independently, 2) reading source material, 3) writing independently, 4) watching short videos, and 5) reading the textbook, all of which are carried out independently with minimal interaction. However, four out of the top five activities that instructors marked as "not a significant component, but I wanted it to be" were collaborative in nature. These included 1) discussing course topics, 2) working on projects collaboratively, 3) participating in live class, and 4) giving presentations. This indicates that, in their Spring 2020 courses, instructors generally emphasized independent activities, and later saw the potential benefit of collaborative activities for improving students' experiences.

Including such collaborative activities should not conflict with Recommendation 1 (Assign coursework judiciously...), and instructors are encouraged to contact their local teaching centers or visit keepteaching.iu.edu to explore evidence-based strategies for facilitating effective collaborative learning.

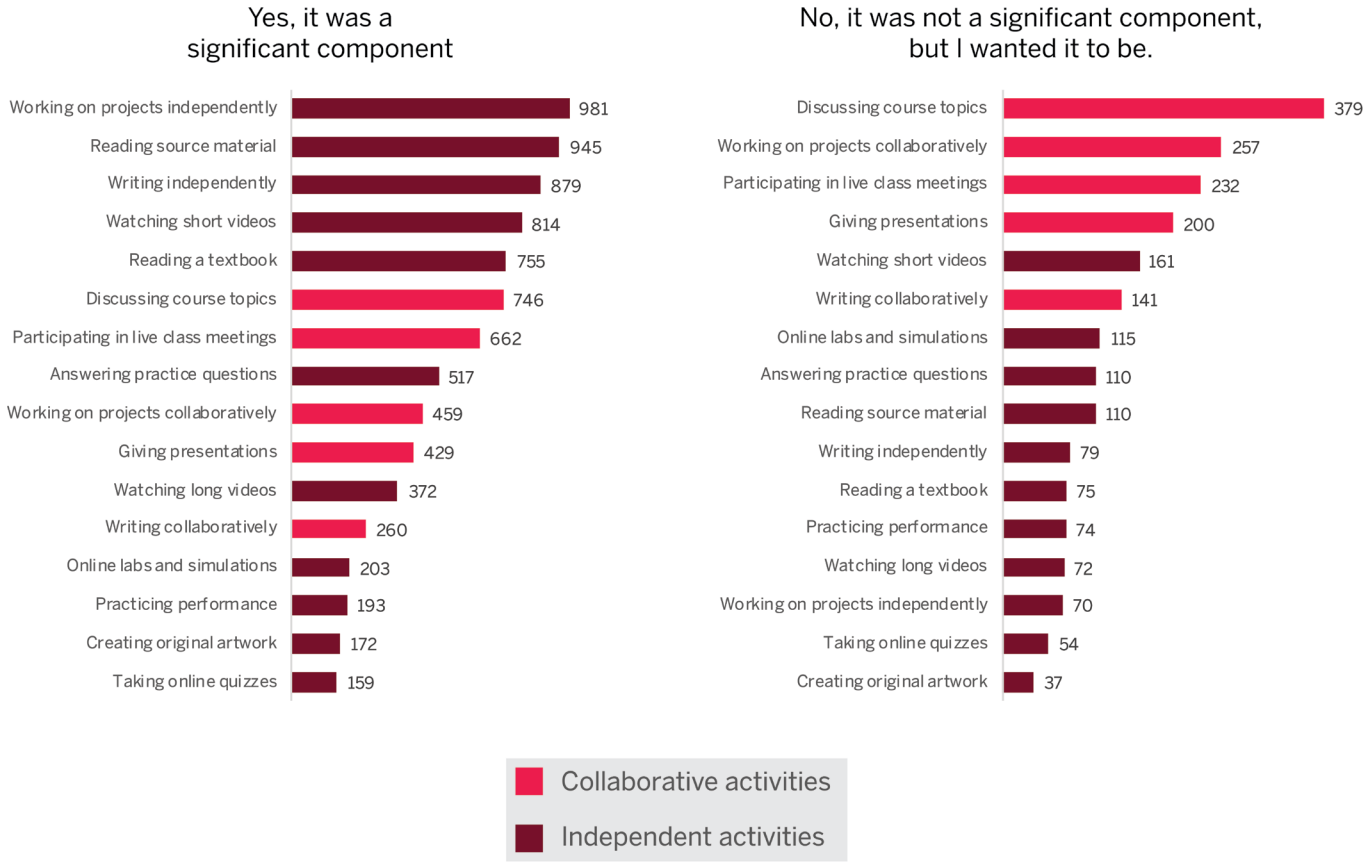

Figure 3: For accessible tabular data, please see **Appendix C on page 13**.

RECOMMENDATION 3 | REPRESENTATIVE COMMENTS

I felt like I completely lost touch with my classmates, and it was harder to talk to them.

We missed out on the dynamism of in-person discussions and presentations. That felt like a huge loss to me, and students often openly wept in Zoom sessions about their loneliness and worry and stress. That was terrible, but also moving that they could share in a group of peers who valued them.

I liked break-out groups a lot, it helped me feel more in touch with my classmates when doing discussions. Only one class did that. They should've encouraged more of that!!

I work pretty slowly, so any question I have about the material I'm learning, I usually think of after class. With online learning, I wasn't able to benefit from other students asking questions during class and creating discussion, which always helped me to understand the material better.

Implement a platform for students to communicate and stay in touch and encourage that we stay connected and work together. We are so advanced in technology, a few of my courses could have handled that better.

RECOMMENDATION 4

Collaborate with other members of IU's vibrant teaching community by sharing materials and successes and providing venues for others to do the same.

With instructors working from home, conversations with colleagues about teaching may have also been curtailed. To their credit, most instructors made strong efforts to develop original materials, and reported great investments in adapting their course materials, largely in isolation. **Ninety percent** of instructors agreed with the statement "I created my own instructional materials," and **68%** agreed with the statement "I was willing to freely share the materials I created with others." However, only **29%** agreed with the statement "I asked others to share their instructional materials with me."

Importantly, **65%** of instructors agreed with the statement "It was more difficult to teach." **Seventy-four percent** of instructors agreed with the statement "As a percent of my total professional responsibilities, the time I invested in teaching increased overall." Only **10%** of respondents indicated that they assigned classwork shared by peers. In open-ended comments, many instructors, particularly new instructors, expressed a desire to be in closer touch with colleagues at the departmental level to share and benefit from each other's expertise.

RECOMMENDATION 4 | REPRESENTATIVE COMMENTS

I hope that IU can create opportunities for instructors to be in closer contact with their department colleagues to streamline systems for learning within a department when possible. I didn't have a great sense as to how the things I was doing compared with my colleagues' choices.

My superiors could have reached out to see how the transition was coming along and set up some sort of group where instructors could share tips and tricks they were learning.

Nobody asked me to share my materials, including instructors teaching sections of a course I coordinate. Had anyone asked, I would have been happy to engage in a conversation. My department makes motions that look like they are sharing teaching materials and pedagogical approaches, but they rarely actually do much.

In general, IU offered great crash courses in online technologies before and during spring break. I'm grateful to everyone who helped run the workshops. I might have benefitted from a repository of successful online assignments and activities that help monitor student engagement and understanding, especially if the repository was discipline specific. It might have been easier to adapt colleagues' assignments (that they were willing to share) to my own course, instead of feeling like each of us was trying to reinvent the wheel.

Make more of a coordinated approach to how the classes would be conducted those remaining few weeks and insist coordinators actually "coordinate" a similar approach among faculty teaching similar classes. My coordinator never asked me how I was doing or how I was conducting my classes. The first time I heard from this was several weeks after the spring semester ended. Possibly, they did this because they felt like I would "do the right thing," but I felt completely on my own and not supported.

I don't think it was IU's responsibility, but each department's head [should] get in touch with faculty, at least those who were in their first year and totally new with IU as a whole. I felt totally abandoned by the department.

Student technology access

This survey was conducted online via Qualtrics, and invitations were distributed by email. Among student respondents, **10%** disagreed with the statement "I had adequate access to the Internet connectivity necessary to participate in remote instruction," and **7%** disagreed with the statement "I had adequate access to computer hardware necessary to participate in remote instruction." Considering this survey's online deployment, we believe that these figures underestimate the percentage of IU students whose technology was inadequate for remote instruction; survey responses may also underestimate the challenges these students faced, which magnify systemic inequities among college students.

Student respondents who reported technology barriers also reported exceptionally high agreement with the statement "I anticipate being behind in my academic progress upon return to the classroom," and exceptionally low levels of agreement with the statement "I still found it easy to think of myself as a college student." In open-ended comments, these students repeatedly described how the presence or reliability of computer hardware and Internet connections were outside their control. Students voiced concern that some instructors were not fair or transparent about their forgiveness policies for classwork. Students with poor access to Internet or hardware generally perceived instructors as having heightened their standards, whereas most other students perceived instructors as having relaxed their standards. The increased volume of assignments with deadlines and the expectations for attending Zoom meetings (often not recorded) were disproportionately cumbersome for students with inadequate access to the Internet at home. These students also reported increased mental health concerns and anxiety, compounded by additional stress from low grades for missing deadlines or being unable to access online materials.

The recommendations presented in this report are intended to be generalizable across campuses, disciplines, and student populations. We also judge them to be particularly beneficial to students who are struggling with technology access. More judicious use of well-thought-out and well-justified learning activities, more opportunities for students to receive support

from their instructors, more opportunities for students to build social connections despite physical distancing restrictions, and more discussion and sharing of effective instructional strategies and materials should ease some of the burden of inadequate technology access on students. But moreover, it is imperative that instructors remain aware of these potential burdens as they design their courses.

REPRESENTATIVE COMMENTS

I had very limited Internet at my house, and I also have five younger siblings. Even logging on to check my email became a monumental task because I had to try to find someone in the family who had a phone hotspot that worked. We have very patchy Internet coverage; some days it would work, other days it wouldn't. Trying to give presentations was a nightmare. And so many siblings in the house just made it all the more difficult.

I had a hard time connecting to the hotspot on my phone (we don't have Wi-Fi at home) and frequently had to rush to a public library parking lot to turn my work in on time.

They should have made professors record Zoom class sessions. My Internet made following Zoom classes difficult at times and the professor still said he won't record class. So, I just missed whole segments of lecture and I couldn't do anything about it because no one in the class would respond to my pleas for notes.

I become totally detached from the school environment, which lowered the level of importance for school.

The most negative outcome for me was that I felt like a failure and that I wasn't able to retain some key concepts in more than one class, which were covered during the switch to remote learning.

I have no prejudice towards online classes, as online has been my primary instruction. However, the general circumstances associated with the pandemic resulted in many negative outcomes. My child has been out of school with no available childcare and I am a single parent also working full time at this time. I was exposed to multiple clients at work that tested positive for COVID. I became sick and had to have a nasal swab test done, which preempted a two-week quarantine pursuant to direction of a medical professional. During this time, I had no Internet access due to a technical issue that could not be corrected by my service provider because they would not allow technicians into homes.

Availability of survey data and opportunities for collaboration

Many student and instructor respondents marked their willingness to participate in follow-up interviews and focus groups on topics contained in our survey and provided contact information for these purposes. Researchers who are interested in running any such studies may recruit from these respondents, or any subgroup of these respondents, provided that their study has Institutional Review Board (IRB) approval. Interested researchers should contact the eLearning Research and Practice Lab at learnlab@iu.edu.

The survey questionnaires, as well as de-identified responses to closed-ended survey items, are publicly available at osf.io/69m3t/files/. Our research is ongoing, but we invite collaboration and welcome independent use of these important data.

A core aspect of the eLearning Research and Practice Lab's mission is to empower IU faculty to examine student learning rigorously and responsibly, by providing a bridge between faculty researchers and the administrative systems that store student and learning data. Faculty who are interested in conducting research using these data, whether related to COVID-19 or not, are encouraged to contact us at **go.iu.edu/elearning-data-request** (IU login required).

Acknowledgments

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This report was prepared by Winona Snapp-Childs (IU PTI), Harmony Jankowski (IU PTI), and Benjamin Motz (study PI; eLearning Research and Practice Lab, and Department of Psychological and Brain Sciences), with the assistance of David Orr, Joshua Quick, John Gosney, Andrea Ingle, and Amanda Chambliss. The study was carried out in collaboration with Julie Wernert and Tonya Miles (Cyberinfrastructure Assessment and Evaluation, IU PTI) and Erica Moore (Center for Survey Research), and with administrative support and approval from Craig Stewart, Stacy Morrone, and Todd Schmitz. The survey instruments benefited greatly from the input of Pratibha Varma-Nelson, Judy Ouimet, Yolanda Trevino, Caleb Keith, Jillian Kinzie, and Victor Borden. We appreciate Bryan Olsen's help deploying the student survey field test. We also extend our sincere appreciation to the thousands of IU students and instructors who took time to participate in this study and share their experiences.

The eLearning Research and Practice Lab is affiliated with the Indiana University Pervasive Technology Institute (IU PTI) and Data to Insight Center (D2I). The Indiana University Pervasive Technology Institute (**pti.iu.edu**) transforms new innovations in cyberinfrastructure, computer science, and information technology into robust tools enabling new breakthroughs in research, scholarship, and artistic creation; delivers such tools and supports their use in academic and private sector contexts; aids the growth of the Indiana economy; and helps build Indiana's 21st century workforce. Supported by major grants from the Lilly Endowment, Inc. and IU, IU PTI is built upon a spirit of collaboration and brings together researchers and technologists from a range of disciplines and organizations, including the Luddy School of Informatics, Computing, and Engineering; the IU Maurer School of Law; the Kelley School of Business; the College of Arts and Sciences; and the Office of the Vice President for Information Technology. The mission of the Data to Insight Center is to conduct societally relevant research, scholarship, and outreach in data science and data-driven computing (**pti.iu.edu/centers/d2i/**). The Data to Insight Center is a collaboration of the Luddy School and the Office of the VP for IT.

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APPENDIX A: TABULAR DATA FOR RECOMMENDATION 1, FIGURE 1

Table 1: The Y-Axis represents the statement, "I felt I was successful as a college student." The X-Axis represents the statement, "It took more effort to complete my coursework."

	It took more effort: Strongly disagree	It took more effort: Disagree	It took more effort: Neither agree nor disagree	It took more effort: Agree	It took more effort: Strongly agree
I was successful: Strongly agree	149	171	131	204	206
I was successful: Agree	41	249	240	595	506
I was successful: Neither agree nor disagree	32	97	152	465	481
I was successful: Disagree	19	95	84	421	696
I was successful: Strongly disagree	20	18	30	85	483

Table 2: The Y-Axis represents the statement, "I still found it easy to think of myself as a college student." The X-Axis represents the statement, "It took more effort to complete my coursework."

	It took more effort: Strongly disagree	It took more effort: Disagree	It took more effort: Neither agree nor disagree	It took more effort: Agree	It took more effort: Strongly agree
I felt like a student: Strongly agree	139	158	131	237	238
I felt like a student: Agree	41	213	187	476	439
I felt like a student: Neither agree nor Disagree	22	88	144	399	416
I felt like a student: Disagree	28	133	115	489	728
I felt like a student: Strongly disagree	29	36	61	168	549

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APPENDIX B: TABULAR DATA FOR RECOMMENDATION 2, FIGURE 1

Table 1: I felt I was successful as a college student.

	My instructor was more available for support	My instructor was not more available for support
Strongly disagree	8%	19%
Disagree	19%	30%
Neither agree nor disagree	20%	21%
Agree	33%	22%
Strongly agree	21%	7%

Table 2: I felt like I lost touch with the Indiana University community.

	My instructor was more available for support	My instructor was not more available for support
Strongly disagree	6%	2%
Disagree	9%	3%
Neither agree nor disagree	17%	8%
Agree	35%	30%
Strongly agree	34%	57%

Table 3: I found my classwork more challenging.

	My instructor was more available for support	My instructor was not more available for support
Strongly disagree	6%	4%
Disagree	20%	11%
Neither agree nor disagree	21%	14%
Agree	31%	30%
Strongly agree	22%	42%

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APPENDIX C: TABULAR DATA FOR RECOMMENDATION 3, FIGURE 1

Table 1: Yes, it was a significant component.

Course component	Students in agreement	Collaborative activity
Taking online quizzes	159	No
Creating original artwork	172	No
Practicing performance	193	No
Online labs and simulations	203	No
Writing collaboratively	260	Yes
Watching long videos	372	No
Giving presentations	429	Yes
Working on projects collaboratively	459	Yes
Answering practice questions	517	No
Participating in live class meetings	662	Yes
Discussing course topics	746	Yes
Reading a textbook	755	No
Watching short videos	814	No
Writing independently	879	No
Reading source material	945	No
Working on projects independently	981	No

Table 2: No, it was not a significant component, but I wanted it to be.

Course component	Students in agreement	Collaborative activity
Creating original artwork	37	No
Taking online quizzes	54	No
Working on projects independently	70	No
Watching long videos	72	No
Practicing performance	74	No
Reading a textbook	75	No
Writing independently	79	No
Reading source material	110	No
Answering practice questions	110	No
Online labs and simulations	115	No
Writing collaboratively	141	Yes
Watching short videos	161	No
Giving presentations	200	Yes
Participating in live class meetings	232	Yes
Working on projects collaboratively	257	Yes
Discussing course topics	379	Yes

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